FOR ADDRESSING RESONANCE, CONTINUOUS HYDRAULICALLY INDUCED VIBRATION, IN CENTRIFUGAL PUMP PIPING SYSTEMS

Pulsation Dampener Size Selection Tables for pipe systems with Centrifugal pumps

1 ***Centrifugal system piping RESONANCE preventers below are from "off the shelf" inventory PRICE LISTS shown for you at www.pulseguard.com*** *When using those prices, be sure to ring Free-phone / call Toll-free for the current escalation and discount %ages.* ***The size volumes listed have been pre-selected to suit your pump connection norms, simply choose the type that is from your material of choice, with the connection that matches your pump; this will provide standard damping. Or call us to make the selection.***

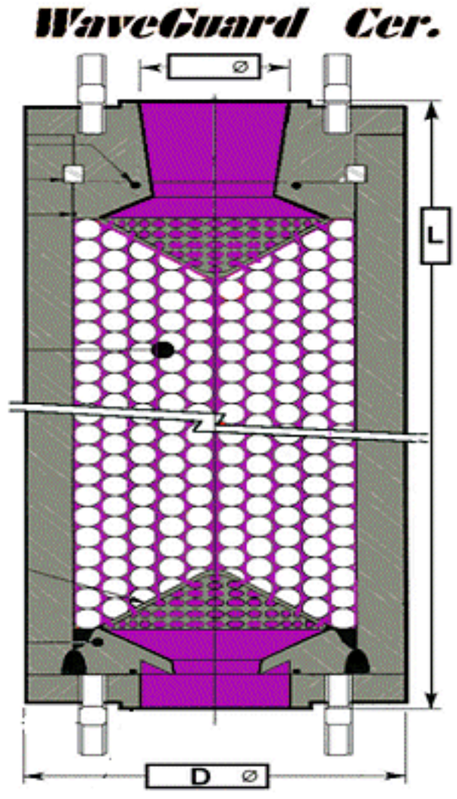
2. **Where there is no occupational health and safety need for in place flush through before servicing, nor any process requirement for constant temperature, or first in first out need to control residence time , not even clean before changing liquids it is still least expensive to use a standard twin connection damper, & save a "T". Use the other connection for the system drain, relief valve, or branch line. Waveguard and DAMPERS for frequencies above 10 Hz., systems shorter than 300 meters or 1000 ft, must use FLOW–THRU. Dampers.**

WaveGuard Cer. — CERAMIC BALLS

Standing wave dissipation dispersal through a miriad of different length of flow path

The "e" number is use in computing the reduction in system acoustic frequency due to increased "softness"

Model Number For Ordering	Connections To Pump	to Sys.	Cnct. Type	Length Without Pipes L Inch.	Diam D Inch	Weight in 316ss Lbs	"e" Nbr. Equivalent	Pres. @93 C Lbs/In3	Wetted your choice Dims. For
Cntrf-Wag/Cer / 0.3e	3/8"	- 1/4"	F NPT	21	1.9		0.3	1,000	
Cntrf-Wag/Cer / 0.6e	1/2"	- 3/8"	F NPT	23	2.4		0.6	1,000	
Cntrf-Wag/Cer / 1.0e	3/4"	- 1/2"	F NPT	24	2.9		1.0	1,000	
Cntrf-Wag/Cer /2.5e	1.0"	- 0.75"	F NPT	38	3.5		2.5	800	
Cntrf-Wag/Cer /5.0e	1.25"	- 1.0"	M NPT	40	4.5		5.0	800	
Cntrf-Wag/Cer /8.5e	1.5"	- 1.25"	M NPT	48	5.6		8.5	800	
Cntrf-Wag/Cer / 14e	2.0"	- 1.5"	M NPT	55	6.6		14	500	
Cntrf-Wag/Cer / 25e	3.0"	- 2.5"	300#	55	8.6		21	500	
Cntrf-Wag/Cer / 40e	4.0"	- 3"	300#	56	10.8		30	500	
Cntrf-Wag/Cer / 57e	5.0"	- 4"	150#	57	12.8		40	300	
Cntrf-Wag/Cer / 88e	6.0"	- 5"	150#	60	16.0		88	300	
Cntrf-Wag/Cer / 155e	8.0"	- 6"	150#	72	20		155	300	

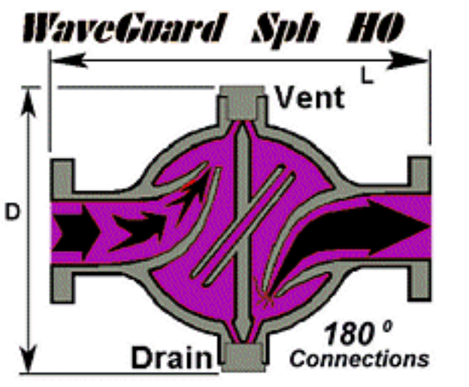


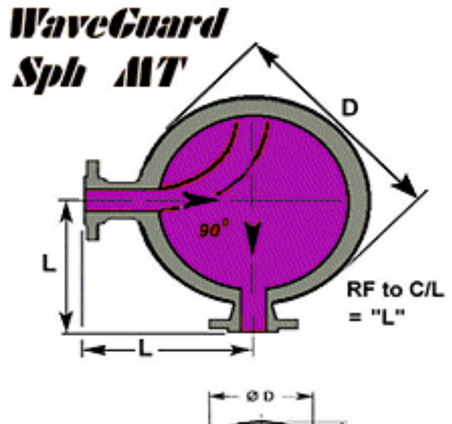
WaveGuard Sph HQ & Sph MT — ORIFICE TECHNIQUES

Intercepts pressure wave pulsation back from the pipe system nodal lengths, and prevents them from feeding back to the pump impellers.

The "e" number is use in computing the reduction in system acoustic frequency due to increased "softness"

Model Number For Ordering Insert HQ or MT	180° or /90/	Connections To Pump	to Sys.	Cnct. Type	Radius C/L to connection end R Inch.	Diam D Inch	Weight in 316ss Lbs	"e" Nbr. Equivalent	Pres. @93 C Lbs/In3	Wetted your choice Dims. For 316ss & CS
Cntrf-Wag/	/90/ 0.3e	1/4"	- 1/8"	F NPT	3.25	4.6		0.3	300	
Cntrf-Wag/	/90/ 0.6e	3/8"	- 1/4"	F NPT	3.75	5.6		0.6	300	
Cntrf-Wag/	/90/ 1.0e	1/2"	- 3/8"	F NPT	4.5	6.6		1.0	300	
Cntrf-Wag/	/90/ 2.5e	3/4"	- 1/2"	F NPT	5.5	8.5		2.5	300	
Cntrf-Wag/	/90/ 5.0e	1.0"	- 0.75"	F NPT	7	10.5		5.0	300	
Cntrf-Wag/	/90/ 8.5e	1.25"	- 1.0"	F NPT	8	12.5		8.5	300	
Cntrf-Wag/	/90/ 14e	1.5"	- 1.25"	M NPT	9	14.0		14	300	
Cntrf-Wag/	/90/ 21e	2.0"	- 1.5"	150 #	10	16.0		21	300	
Cntrf-Wag/	/90/ 30e	3.0"	- 2.5"	150 #	12	18.0		30	250	
Cntrf-Wag/	/90/ 40e	4.0"	- 3"	150 #	14	20		40	250	
Cntrf-Wag/	/90/ 63e	5.0"	- 4"	150 #	18	24		63	250	
Cntrf-Wag/	/90/ 99e	6.0"	- 5"	150 #	24	30		99	250	
Cntrf-Wag/	/90/ 149e	8.0"	- 6"	150 #	28	34		149	250	
Cntrf-Wag/	/90/ 205e	10"	- 8"	150 #	31	38		205	250	
Cntrf-Wag/	/90/ 576e	12"	- 10"	150 #	39	54		578	250	





CavGuard Vert. — For BACK-FLOW SLAM — BUBBLE CATCHER

Causes the generation of a bubble cushion chamber. The cushion softens the backflow slam from the implosion of the cavity drawn out by the flow away from the pump on shut down.

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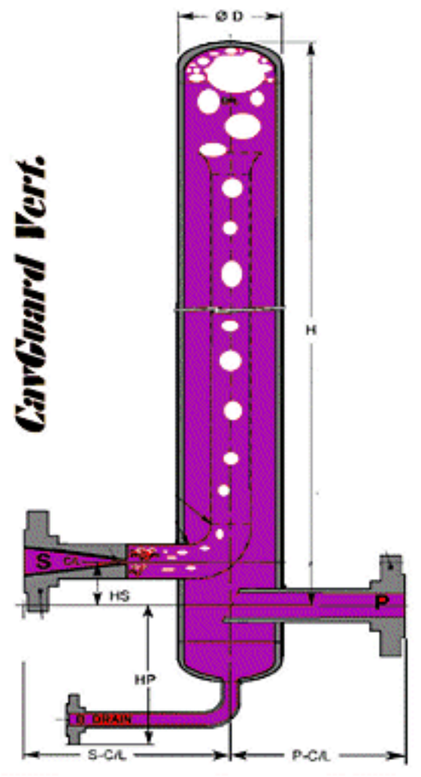
Model Number For Ordering	"e" Nbr	Connections To Pump	to Sys.	Connct. Type	Length Without Pipes L Inch.	Diam D Inch	Weight in 316ss Lbs.	Residence Vol. Gls.	Pres. @93 C Lbs/In3	Wetted your choice Dims. For	Spares Kit	*
Cntrf-Gag / 75		1"	0.75"	F NPT	60	4.5		3	400	316	Not Reqd.	
Cntrf-Gag /1 75		1.5"	1.0"	F NPT	60	6.6		7	400	316	Not Reqd.	
Cntrf-Gag /310		2.0"	1.5"	M NPT	60	8.6		14	400	316	Not Reqd.	
Cntrf-Gag /575		2.5"	2.0"	300 #	72	10.7		24	400	316	Not Reqd.	
Cntrf-Gag /825		3.0"	2.5"	300 #	72	12.7		35	400	316	Not Reqd.	
Cntrf-Gag /1320		4.0"	3.0"	300 #	72	16		55	400	316	Not Reqd.	
Cntrf-Gag /3490		5.0"	4.0"	300 #	120	20		140	400	316	Not Reqd.	
Cntrf-Gag /5070		6.0"	5.0"	300 #	120	24		210	400	316	Not Reqd.	



"Capacitance + direction change Impedance"

3. ****The question mark "?"* = Letters, showing your choice of compatible gasket Mtl, add the letter to ordering Pt. Nbr: - N=Buna N, E=EP, H=Hypalon,x V=Fluoro-Carbon,x x= addition to cost***

A20 =Alloy 20, H22 =Hasteloy 22, Ti2 =Titanium 2, Tan =Tantalum, Zir Zirconium, DSS = Duplex Stainless, SDSS =Super Duplex.

PUMPS make FLOW, SYSTEMS cause PRESSURE, pressure pulsation is a system response, AND a system responsibility NOT a pump manufacturers liability.

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